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U. S. Department of Agriculture

Preliminary
Food Distribution Administration
Program Analysis and Appraisal Branch
4/29/43

FOOD WASTE IN DISTRIBUTION AND USE

Summary - Outline

Point in Use or Marketing	Description of Waste	Crops or Products	Possible Remedy
			Perhaps as important as any one remedy in preventing food waste is education in the form of publicity and guidance. Individual care and responsibility in preventing waste could make for tremendous savings. The importance and need for conservation can be driven home by posters such as employed for war bond sales or OWI purposes, the newspapers, movies, etc. This remedy is implied in all programs listed below but is not repeated under each one.
A. On the Farm	1. Unharvested or unmarketed produce because of: (a) Insufficient outlets (b) Low prices (c) Low yields (especially in last pickings) (d) Labor and equipment difficulties (e) Unaccustomed to marketing excess production	1. Almost all crops and livestock but especially eggs, fruits and vegetables, peanuts, soybeans, milk, and products produced in small quantities. Example: In the 1942 season, one third of the Texas cabbage crop was unharvested.	1. (a) Provide improved local outlets by: (1) Widening the assembling activities of local merchants (2) Local F.D.A. purchases in small lots (3) Central market purchases by F.D.A. (4) Full gas and rubber supplies to itinerant truckers (b) Price support and see (a) above (c) Subsidies for marginal pickings (d) See (A 3) below (e) Education
	2. Low use value of food by diverting to: (a) Feed (b) Fertilizer	2. Potatoes, cereals, soybeans, peanuts, skim milk, cowpeas, cottonseed meal. Examples: About 3 percent of the Irish potato crop is ordinarily fed to livestock. One hundred million bushels of wheat are to be sold for feed by the C.C.C. About 25 percent of all milk is used for feed as skim milk.	2. (a & b) (1) Same as 1(a) and (b) above (2) Adjustment of federal programs which encourage low use value, i.e. feed-wheat, peanut and similar programs (3) (a) Minimize culling (b) Adjustment of grade standards, "Victory Grades" (4) Provide processing facilities (See D 2)
	3. Inadequate facilities causing spoilage (a) Refrigeration (b) Packing (c) Storing (d) Other	3. Especially perishable foods Example: At least 3 percent of the commercial sweet potato crop ordinarily is lost to decay on the farm.	3. Shortages of labor, equipment and facilities are part of a larger problem involving shortage conditions in almost all lines of production. Although efforts should be made to secure these factors where needed, the demands in other parts of the economy and for military use cannot be overlooked. Priorities can be established for use of available facilities based on essentiality and perishability.
B. In Transportation	1. Inadequate facilities and supplies causing food deterioration (refrigerator cars, boxes, trucks, fumigants, etc.)	1. Especially perishable foods	1. (a) See (A 3) above
	2. Inadequate packing and loading causing breakage and spoilage (a) Bulk shipments (b) Unsafe boxes (c) Packing deteriorating food with sound food	2. Especially perishable and breakable foods - fruits and vegetables, eggs	2. (a & b) Standardization of packages to include only safest types. Guidance in methods of safe packing. Elimination of bulk shipments except where efficient. (c) Sorting and grading
	3. Rough handling causing breakage (a) Aggravated by excessive handling	3. Especially perishable and breakable foods - fruits and vegetables, eggs	3. See (B 2 a) (immediately above). Rules of care for truck and railway companies (a) Simplification of market movement
	4. Delays causing spoilage (a) Cross hauling and similar unnecessary transportation	4. Especially perishable and breakable foods - fruits and vegetables, eggs	4. A system of priorities giving first claim on facilities to products which are needed most and are most perishable (a) Restrictions on cross haul shipments (1) Zoning (2) Coordination of local assembling activities
	5. Inadequate techniques of ventilation, stacking, etc. (See Storage (C) below)	5. All products (1-5) Example: A recent study showed that almost one percent of the Irish potatoes shipped from Maine to Boston were damaged in transit.	5. Education, guidance and rules of care

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C. In Storage	<ul style="list-style-type: none"> 1. Inadequate techniques of: <ul style="list-style-type: none"> (a) Stacking (b) Ventilating, adjusting temperature and humidity (c) Fumigation and spraying (d) Handling rodents and other pests (e) Care in general 2. Lack of space 3. Overstoring causing deterioration of product or loss of food value (partly unavoidable) 	<ul style="list-style-type: none"> 1. Almost all except highly perishable products which are not stored Example: It is estimated that at least 5 percent of stored grain is destroyed or lost due to insects 2. Soybeans, wheat 3. Perishable and semi-perishable products Example: About 70 percent of the ascorbic acid value of Irish potatoes is lost after six months storage 	<ul style="list-style-type: none"> 1. Education, guidance and rules of care (a) Wider program of rodent and other pest control 2. (a) Shifting from overcrowded areas to areas of deficit supply or extra capacity (b) Enforced leasing of private unused space for public use (c) Provision for increased storage in consumers hands; for example, feed on farms (d) Priorities in transportation to products with poorest storage facilities (e) Construction of additional storage space 3. (a) Improved methods of storage (b) Stimulated movement by programs such as, Victory Food Special or by heavy government purchases (c) See (C 2 d)
D. In Processing	<ul style="list-style-type: none"> 1. Inadequate salvage of by-products because of: <ul style="list-style-type: none"> (a) Insufficient volume or unprofitableness (b) Ignorance of by-product value (c) Black market operations (d) Low use value 2. Spoilage <ul style="list-style-type: none"> (a) In waiting to be processed (b) During processing (c) After being processed (See Storage Wastes (above)) 3. Methods of preparation that utilize only part of the food value of the raw product (partly unavoidable) 4. Operating losses caused by: <ul style="list-style-type: none"> (a) Spillage, etc. (b) Duplication of processing facilities with low plant volumes but constant operating loss 5. Adulteration, lack of sanitation and uncleanliness making food unfit for human consumption 	<ul style="list-style-type: none"> 1. Almost all products but especially milk, canned foods, small scale meat slaughtering 2. Soybeans, canning produce, eggs, milk 3. Almost all processed products; peanuts for oil, soybeans for oil, milk for butter, white flour, white rice, canned goods, cottonseed, white sugar Example: About 20 percent of the 1942 crop of peanuts was used for oil, the meal being fed to livestock 4. Milk, eggs, etc. 5. All Example: In 1942 the Food and Drug Administration condemned products in 2,662 instances (mostly food) 	<ul style="list-style-type: none"> 1. (a) Implement salvage operations by: <ul style="list-style-type: none"> (1) Collection by governmental agency (2) Making salvage profitable (3) Subsidizing salvage operations (b) Stress the need for conservation and its profitability (c) Eliminate the black market (d) See (A 2) and (D 3) 2. (a) Provision of adequate facilities for rapid processing <ul style="list-style-type: none"> (1) By shifting raw products to plants operating at less than capacity (2) By night operations (3) Constructing new plants (4) Shifting to alternate uses (b) Care and education (c) See Storage (above) 3. (a) Prohibition of methods of preparation which destroy food value (such as dehydrating without blanching and bleaching) <ul style="list-style-type: none"> (1) Specifications concerning methods in purchase contracts (b) Instruction in best methods of processing (c) Facilitating and encouraging the full use of high food value forms such as whole wheat bread, and edible peanuts 4. (a) Care (b) Concentration of operations 5. Wider inspection by Food and Drug Administration and more rigid regulations
E. In Wholesale Establishments and Markets	<ul style="list-style-type: none"> 1. See storage wastes (above) 2. Spoilage due to: <ul style="list-style-type: none"> (a) Insufficient turnover <ul style="list-style-type: none"> (1) High prices a cause (b) Leftovers (c) Gluts <ul style="list-style-type: none"> (1) Unequal distribution between markets (2) Large general supply 3. Consignment selling to retailers causing waste of unsold, returned commodity 4. Duplicated facilities with excessive or inadequate inventories in different establishments (each establishment carries its own inventory - some too much some too little) <ul style="list-style-type: none"> (a) Excessive number of brands 	<ul style="list-style-type: none"> 1. Especially perishable products 2. Perishable products Example: In 1942 the Food and Drug Administration condemned products in 2,662 instances (mostly food) 4. Perishable foods <ul style="list-style-type: none"> (a) Most packaged goods 	<ul style="list-style-type: none"> 1. See storage (above) 2. (a) Reduction of price to move deteriorating produce (b) Gifts to charitable institutions (c) Coordinated by local market authorities 3. Orderly marketing schemes and surplus disposal <ul style="list-style-type: none"> (1) Food Stamp Plan (2) Low Price Markets - Pushcart vendors (3) School Lunches (4) Direct Grants of Food (5) Victory Food Special 3. Abolish return option in selling 4. Elimination of unneeded establishments and brands <ul style="list-style-type: none"> (a) (1) Grade labeling (2) Victory brands

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F. In the Retail Store	<ul style="list-style-type: none"> 1. See storage wastes (above) 2. Spoilage due to: <ul style="list-style-type: none"> (a) Insufficient turnover (b) Maintained prices on deteriorating produce (especially in chain stores) for fear of cutting prices on good quality merchandise or for lack of price making power of local managers 3. Consumer handling causing spoilage and breakage 4. See (E 4) above 5. Displays exposing food to sun, rain, etc. 	<ul style="list-style-type: none"> 1. Especially perishable products 2. Perishable products 3. Perishable and breakable goods 4. Perishable foods 5. Perishable foods <ul style="list-style-type: none"> (1-5) Example: A study on waste of fruits and vegetables in a sample number of retail stores in Washington, D. C. for several summer weeks in 1940 showed wastes as high as: 15% for tomatoes, 12% for kale, 14% for avocados, 8% for cabbage, etc. 	<ul style="list-style-type: none"> 1. See storage (above) 2. (a) Planned buying <ul style="list-style-type: none"> (b) Two price system based on quality (1) Vesting local managers with minor price determining authority 3. Sturdier containers <ul style="list-style-type: none"> (a) Elimination of celophane wrapped beans and similar products 4. See (E 4) above 5. Care
G. The Consumer	<ul style="list-style-type: none"> 1. Overbuying and hoarding 2. Discarding food parts with nutritional value <ul style="list-style-type: none"> (a) Outer leaves, tops (b) Sour milk (c) Cooking juices (d) Fat 3. Poor preparation: <ul style="list-style-type: none"> (a) In ways that do not retain food value, i.e. overcooking (b) In unpalatable ways (c) Burning, spilling, etc. (d) Poor canning methods and materials 4. Left over food (discarded) <ul style="list-style-type: none"> (a) Preparing too much (b) Not eating the whole portion 5. Poor selection of food - too many calories not enough vitamins 6. The restrictions of table etiquette (such as eating chicken with fingers or dunking) 7. Unutilized garbage 8. Pet feeding (dogs, cats, elephants, etc.) 9. Wastes of armed forces and institutions <ul style="list-style-type: none"> (a) Overbuying (b) Carelessness (c) Other wastes noted in 1-8 	<ul style="list-style-type: none"> 1. Perishable and semi-perishable goods 2. Vegetables especially <ul style="list-style-type: none"> Example: Beet tops have more food value than beet root but yet are almost always discarded 3. Practically all food but especially fruits and vegetables <ul style="list-style-type: none"> Example: Cabbage which is cooked 10 minutes has 62% more ascorbic acid than cabbage cooked 60 minutes 4. All 5. Deficiencies of leafy, green vegetables especially common 6. All 7. All 8. Meat, milk, peanuts 9. All 	<ul style="list-style-type: none"> 1. (a) Rationing 2. Education in possible uses and the need for conservation 3. Education and guidance 4. (a) Reuse of leftovers in puddings, stews, soups, etc., i.e. "victory dishes" <ul style="list-style-type: none"> (b) "Clean plate club" (c) Planning 5. (a) Education <ul style="list-style-type: none"> (b) Restricting supplies of non-essential foods and foods of low food value, and increasing supplies of nutritional foods (c) Fortifying food with vitamins, calcium, etc. 6. (a) "Victory manners to meet wartime conditions" 7. Garbage collection for hog feeding and increase of hog-garbage farms <ul style="list-style-type: none"> (a) Consumer separation of edible from non-edible garbage 8. Prohibiting the use of certain food for pets (milk, peanuts, meat except horse meat, or if unfit for human consumption) 9. (a) Planned needs <ul style="list-style-type: none"> (b) Discipline for food waste (c) Institutional hog farms for garbage utilization 1. (a) Rationing <ul style="list-style-type: none"> (b) Subsidies to the poor <ul style="list-style-type: none"> (1) Factory lunches - free or at low prices (2) Food Stamp Plan (3) Direct grants (4) Child feeding programs 2. In order to conserve food already produced, every effort should be made to secure the necessary priorities for the marketing of needed products. This should be balanced against the needs of other sections of the economy. See (A 3) above. 3. (a) Removal of inter-state trade barriers <ul style="list-style-type: none"> (b) Removal of prorates and quality restrictions which reduce supply
H. Overall Considerations	<ul style="list-style-type: none"> 1. Poor social distribution of food yielding low marginal utility to some consumers and high utility to others 2. Inadequate supplies of labor and equipment causing spoilage 3. Monopolistic practices causing: <ul style="list-style-type: none"> (a) Reduced flow of commodities between States and areas (b) Curtailment of production or distribution (excessive culling, etc.) 	<ul style="list-style-type: none"> 1. All 2. Perishable commodities especially 3. (a) Fluid milk <ul style="list-style-type: none"> (b) Peanuts, citrus, raisins, nuts <ul style="list-style-type: none"> Example: In the 1941-42 season 1,050,000 boxes of California oranges were "donated to charity and/or eliminated in accordance with provisions of the marketing agreement" 	<ul style="list-style-type: none"> 1. (a) Rationing <ul style="list-style-type: none"> (b) Subsidies to the poor <ul style="list-style-type: none"> (1) Factory lunches - free or at low prices (2) Food Stamp Plan (3) Direct grants (4) Child feeding programs 2. In order to conserve food already produced, every effort should be made to secure the necessary priorities for the marketing of needed products. This should be balanced against the needs of other sections of the economy. See (A 3) above. 3. (a) Removal of inter-state trade barriers <ul style="list-style-type: none"> (b) Removal of prorates and quality restrictions which reduce supply